

SILICON P-CHANNEL MOST ARRAY

DEVELOPMENT SAMPLE DATA

This monolithic integrated circuit comprises four matched P-channel, enhancement type, insulated gate field effect transistors. This device is intended as high quality solid-state chopper in sensitive d.c. amplifiers.

The TAA530 offers the following advantages as a chopper:

1. Differential input and output
2. Suppression of feedthrough spikes by bridge configuration
3. Extremely low thermal voltage and current drift
4. Applicable at very high chopping frequencies

The device is encapsulated in a 10 leads TO-74 reduced height envelope

QUICK REFERENCE DATA

Each MOST

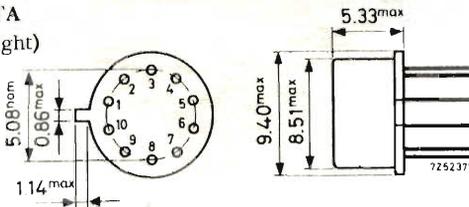
Drain-source voltage	$\pm V_{DS}$	max.	25 V
Gate-source voltage (peak value)	$\pm V_{GSM}$	max.	50 V
Gate-source resistance	r_{GS}	>	10 T Ω
Drain resistance (on)	r_{DSon}	<	200 Ω

Characteristics of the chopper in a differential amplifier

Input offset voltage at $f_{ch} = 1$ kHz	V_{io}	<	2 μ V
Thermal drift of the input offset voltage at $f_{ch} = 1$ kHz	$\Delta V_{io}/\Delta T$	<	20 nV/ $^{\circ}$ C
Input offset current at $f_{ch} = 1$ kHz	I_{io}	<	2 nA
Thermal drift of the input offset current at $f_{ch} = 1$ kHz	$\Delta I_{io}/\Delta T$	<	20 pA/ $^{\circ}$ C

MECHANICAL DATA

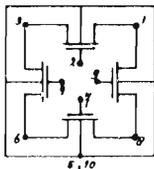
TO-74 (reduced height)



Dimensions in mm

These data, based on the specifications and measured performance of development samples, afford a preliminary indication of the characteristics to be expected of the described product. Distribution of development samples implies no guarantee as to the subsequent availability of the product

CIRCUIT DIAGRAM



RATINGS (Limiting values) ¹⁾

Voltages

Drain-source voltage	$\pm V_{DS}$	max. 25 V
Drain-substrate voltage	$-V_{DB}$	max. 25 V
Source-substrate voltage	$-V_{SB}$	max. 25 V
Gate voltage to any other terminal		
Continuous	$\pm V_{GX}$	max. 15 V
Instantaneous peak value	$\pm V_{GXM}$	max. 50 V

Current

Current in any terminal	$\pm I_X$	max. 10 mA
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Power dissipation

Total power dissipation up to $T_{amb} = 75\text{ }^\circ\text{C}$	P_{tot}	max. 50 mW
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¹⁾ Limiting values according to the Absolute Maximum System as defined in IEC publication 134.

CHARACTERISTICS (each MOST) $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specifiedGate-source cut-off voltage

$$-I_D = 1\text{ }\mu\text{A}; -V_{DS} = 10\text{ V}; V_{BS} = 0 \quad -V_{(P)GS} \quad 3\text{ to }6\text{ V}$$

Gate-source resistance

$$\pm V_{GS} = 10\text{ V}; V_{BS} = V_{DS} = 0 \quad r_{GS} \quad > 10\text{ }1\Omega^1)$$

Drain-source resistance (on)

$$-V_{GS} = 10\text{ V}; V_{BS} = V_{DS} = 0 \quad r_{DSon} \quad < 200\text{ }\Omega$$

Drain-source resistance (off)

$$V_{GS} = V_{BS} = V_{DS} = 0 \quad r_{DSoff} \quad > 100\text{ M}\Omega$$

CHARACTERISTICS of the chopper in a differential amplifier at a chopping frequency $f_{ch} = 1\text{ kHz}$ (All characteristics are proportional to the chopping frequency)²⁾

Input offset voltage

$$V_{io} \quad < 2\text{ }\mu\text{V}$$

Thermal drift of the input offset voltage (0 to +75 °C)

$$\Delta V_{io}/\Delta T \quad < 20\text{ nV}/^{\circ}\text{C}$$

Input offset current

$$I_{io} \quad < 2\text{ nA}$$

Thermal drift of the input offset current (0 to +75 °C)

$$\Delta I_{io}/\Delta T \quad < 20\text{ pA}/^{\circ}\text{C}$$

Bias current

$$R_S = 100\text{ k}\Omega \quad I_A \quad < 2\text{ nA}$$

$$R_S = 1\text{ k}\Omega \quad I_A \quad < 20\text{ nA}$$

Thermal drift of the bias current (0 to +75 °C)

$$R_S = 100\text{ k}\Omega \quad \Delta I_A/\Delta T \quad < 20\text{ pA}/^{\circ}\text{C}$$

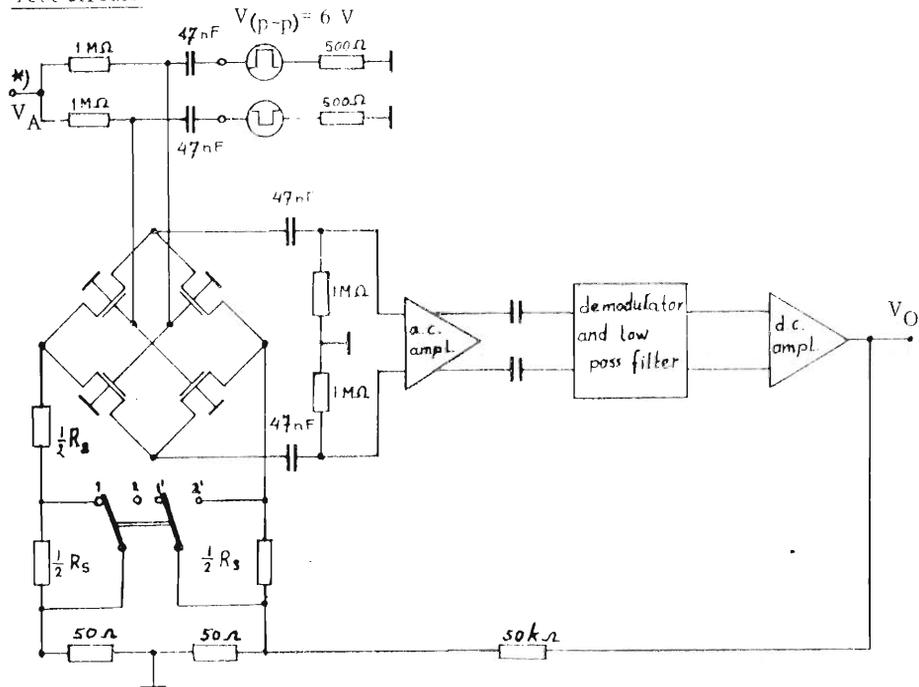
$$R_S = 1\text{ k}\Omega \quad \Delta I_A/\Delta T \quad < 200\text{ pA}/^{\circ}\text{C}$$

1) $1\text{ T}\Omega = 1\text{ tera ohm} = 10^{12}\text{ }\Omega$

2) Test circuit see page 4.

CHARACTERISTICS (continued)

Test circuit



1. Input offset voltage: $V_{i0} = V_O \times 10^{-3}$
2. Input offset current: $I_{i0} = \frac{V_O \times 10^{-3}}{R_S}$
3. Bias current: $I_B = \frac{V_O \times 10^{-3}}{R_S}$

Switch S in position 1-1'

Switch S in position 1-1'

Switch S in position 2-2'

*) $-V_A = |V(p-p)| + 2.5\text{V}$